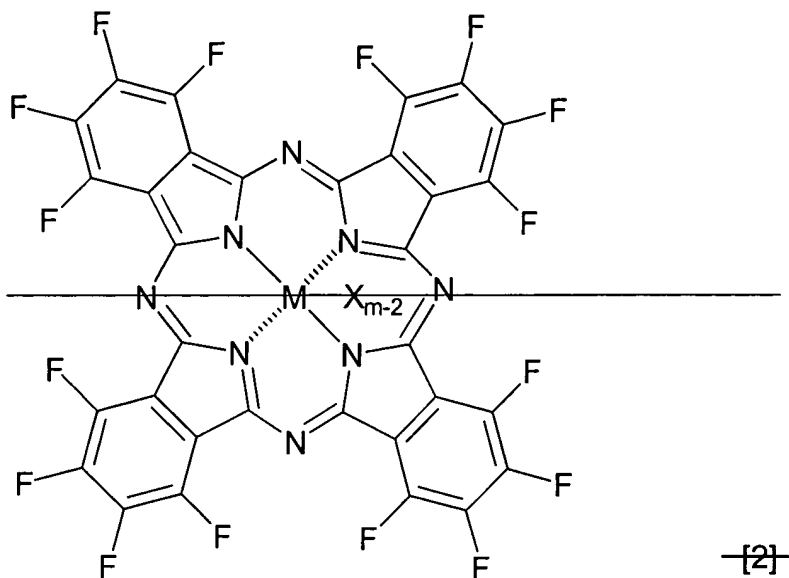


AMENDMENTS TO THE CLAIMS

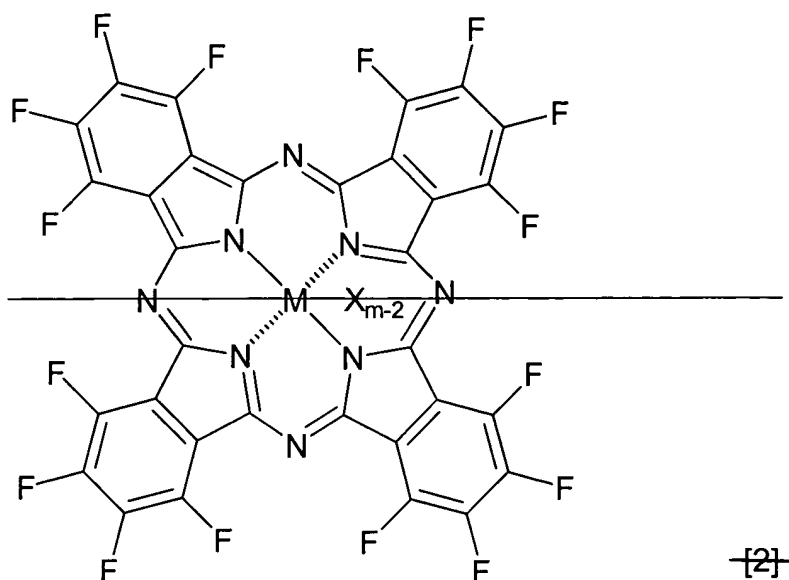
1-17. (Cancelled)

18. (Currently Amended) The catalyst according to Claim ~~16~~ 32, wherein the compound (A) is a compound represented by 'the general formula ~~{2}~~ (A3)÷



~~wherein M represents an atom of the Group II to the Group XII excluding Cu or Lanthanide series of the Periodic Table, X represents a hydrogen atom, a halogen atom, a hydrocarbon group or a hydrocarbon oxy group, and when a plural number of X's exist, they may be mutually the same or different, m represents a valence of M.~~

19. (Currently Amended) The catalyst according to Claim ~~17~~ 33, wherein the compound (A) is a compound represented by the general formula ~~{2}~~ (A3)÷



~~wherein M represents an atom of the Group II to the Group XII excluding Cu or Lanthanide series of the Periodic Table, X represents a hydrogen atom, a halogen atom, a hydrocarbon group or a hydrocarbon oxy group, and when a plural number of X's exist, they may be mutually the same or different, m represents a valence of M.~~

20. (Original) The catalyst according to Claims 18, wherein M is an atom of the Group IX or Group XII.

21. (Original) The catalyst according to Claims 19, wherein M is an atom of the Group IX or Group XII.

22. (Currently Amended) The catalyst according to claim & 32, wherein the compound(B) is a metallocene compound.

23. (Currently Amended) The catalyst according to claim 9 33, wherein the compound(B) is a metallocene compound.

24. (Withdrawn) A process for producing an addition polymer, which comprises polymerizing an addition polymerizable monomer in the presence of the catalyst of claim 8.

25. (Withdrawn) A process for producing an addition polymer, which comprises polymerizing an addition polymerizable monomer in the presence of the catalyst of claim 9.

26. (Withdrawn) A process for producing an addition polymer, which comprises polymerizing an addition polymerizable monomer in the presence of the catalyst of claim 22.

27. (Withdrawn) A process for producing an addition polymer, which comprises polymerizing an addition polymerizable monomer in the presence of the catalyst of claim 23.

28. (Withdrawn) The process according to Claim 24, wherein the addition polymerizable polymer is an olefin.

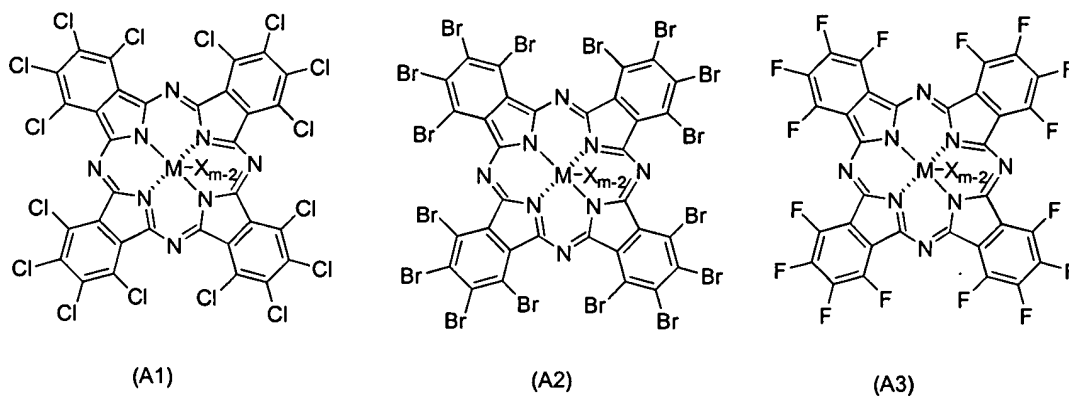
29. (Withdrawn) The process according to Claim 25, wherein the addition polymerizable polymer is an olefin.

30. (Withdrawn) The process according to Claim 28, wherein the olefin is a mixture of ethylene and α -olefin.

31. (Withdrawn) The process according to Claim 29, wherein the olefin is a mixture of ethylene and α -olefin.

32. (New) A catalyst for addition polymerization obtained by contacting:

(A) a compound selected from the group consisting of compounds represented by the formulas (A1), (A2) and (A3):



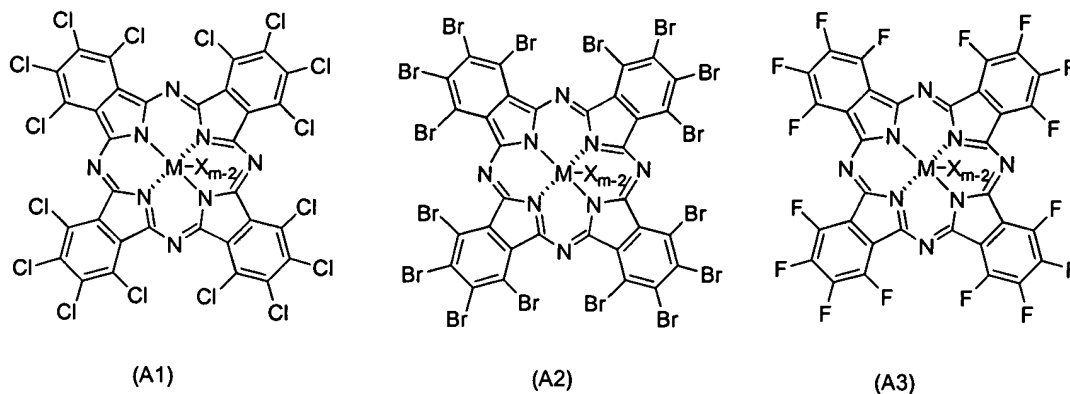
wherein M represents an atom of the Group II to the Group XII (with the proviso that Cu is excluded in (A3)) or Lanthanide series of the Periodic Table; X represents a hydrogen atom, a halogen atom, a hydrocarbon group or a hydrocarbon oxy group, and when a plural number of X's exist, they may be mutually the same or different; m

represents a valence of M, wherein the M in which the lowest orbital level energy level of vacant unoccupied molecular orbital having the valence p-atomic p-type atomic orbital of valence electron orbital of the M as a main component wherein the coefficient represented by a linear bonding linear combination is 0.4 or more is calculated to be 0.008 atomic unit (Hartree) or less by the calculation of density functional method (B3LYP/3-21G level); with

(B) a metal compound (B) selected from the group consisting of compounds represented by $L_a M^1 X_b$ and μ -oxo type compounds thereof, wherein M^1 is a metal atom of the Group III to the Group XIII or Lanthanide series; L is a group having cyclopentadienyl type anion skeleton or a group containing a hetero atom; a plurality of L's may be linked directly, or through a residual group containing a carbon atom, a silicon atom, a nitrogen atom, an oxygen atom, a sulfur atom or a phosphorous atom; X is a halogen atom or a hydrocarbon group; "a" represents a number satisfying $0 < a \leq 8$; and "b" represents a number satisfying $0 < b \leq 8$.

33. (New) A catalyst for addition polymerization obtained by contacting:

(A) a compound selected from the group consisting of compounds represented by the formulas (A1), (A2) and (A3):



wherein M represents an atom of the Group II to the Group XII (with the proviso that Cu is excluded in (A3)) or Lanthanide series of the Periodic Table; X represents a hydrogen atom, a halogen atom, a hydrocarbon group or a hydrocarbon oxy group, and when a plural number of X's exist, they may be mutually the same or different; m represents a valence of M, wherein the M in which the lowest orbital level energy level of vacant unoccupied molecular orbital having the valence p-atomic p-type atomic orbital of valence electron orbital of the M as a main component wherein the coefficient represented by a linear bonding linear combination is 0.4 or more is calculated to be 0.008 atomic unit (Hartree) or less by the calculation of density functional method (B3LYP/3-21G level); with

(B) a metal compound (B) selected from the group consisting of compounds represented by $L_a M^1 X_b$ and μ -oxo type compounds thereof, wherein M^1 is a metal atom of the Group III to the Group XIII or

Lanthanide series; L is a group having cyclopentadienyl type anion skeleton or a group containing a hetero atom; a plurality of L's may be linked directly, or through a residual group containing a carbon atom, a silicon atom, a nitrogen atom, an oxygen atom, a sulfur atom or a phosphorous atom; X is a halogen atom or a hydrocarbon group; "a" represents a number satisfying $0 < a \leq 8$; and "b" represents a number satisfying $0 < b \leq 8$, and (C) an organoaluminum compound.

34. (New) The catalyst component according to claim 32, wherein M is an atom of the Group IX or the Group XII.

35. (New) The catalyst component according to claim 33, wherein M is an atom of the Group IX or the Group XII.